MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2018 / 2019

DCS5268 – COMPUTER PROGRAMMING

(Diploma in Electronic Engineering)

4 MARCH 2019
9.00 A.M. – 11.00 A.M.
(2 Hours)

INSTRUCTION TO STUDENT

1. This Question paper consists of 5 pages including cover page with 4 Questions only.
2. **ANSWER ALL QUESTIONS.** All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the answer Booklet provided.

Question 1

(a) Integrated Development Environment (IDE) is a software package used for developing computer programs. Briefly explain each of the six basic components in a typical C program development environment.

[9 marks]

(b) Determine the formatted output of the program segment given in Figure Q1.1.

```
int    a = 255;
float  b = 0.0000456789;
char n[] = "Wonderful world";

printf("%+d\n%-5d\n%.12d\n", a, a, a);
printf("%12.5f\n%g\n", b, b);
printf("%12.6s\n", n);
```

Figure Q1.1. [6 marks]

(c) The flowchart in Figure Q1.2 inputs a grade point average (GPA) from a student, and prints a suitable message stating the academic status of the student. Convert the flowchart to a complete C program.

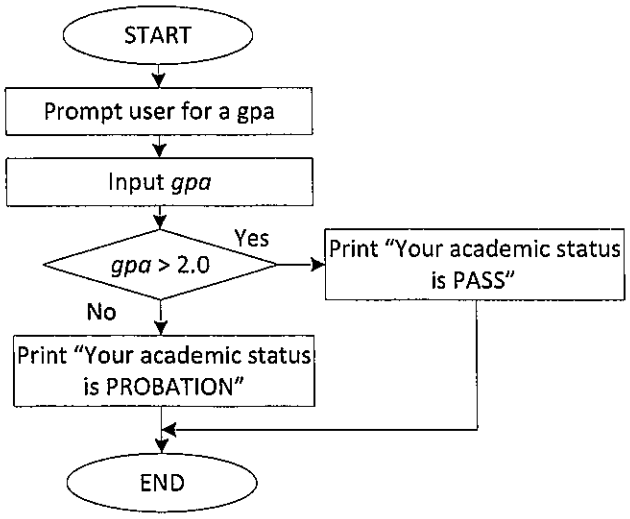

Figure Q1.2 [10 marks]

Continued...

Question 2

(a) Construct a conditional expression that tests each of the following conditions:

(i) *weight* is greater than or equal to 70 but less than 100. [2 marks]

(ii) *n* is an even number. [2 marks]

(b) Rewrite the C program segment given in Figure Q2.1 with `switch` statements.

```
if (status == 'A' || status == 'a')
  printf("Excellent.");
else if (status == 'B' || status == 'b')
  printf("Satisfactory.");
else
  printf("Meeting expectation.");
```

Figure Q2.1 [6 marks]

(c) Table Q2.1 shows the parking rates for motorcar at a shopping mall car park.

First 2 hours or part thereof	RM4.00
Every subsequent hours or part thereof	RM1.00
Daily maximum rate	RM20.00

Table Q2.1

Write a complete C program that calculates and displays the corresponding parking fee upon receiving number of parking hours. The program will be ended when the user enters a negative value. Hint: You may use the mathematical library function `ceil()` that takes a single argument, and returns the nearest integer greater than the argument passed.

A sample program output is given in Figure Q2.2 (texts in **bold** are user input).

```
Enter parking hours: 2.5
Parking fee = RM5.00

Enter parking hours: 22
Parking fee = RM20.00

Enter parking hours: -1
Program ended. Thank you.
```

Figure Q2.2 [15 marks]

Continued...

Question 3

(a) Using appropriate in-built function, write one single statement that performs each of the following tasks:

(i) To display the value of 2 raised to the power 10.

(ii) To find the square root of 425, and assign the value to a real-valued variable *n*1.

(iii) To determine the length of the string "Wonderful world!", and assign the value to an integer variable *n*2.

[6 marks]

(b) A book shop pays its part-time worker at the rate of RM15 per hour. On top of that, meal allowance will be given according to the rate shown in Table Q3.1.

Working hour	Meal allowance (RM)
8 and above	22
4 - 7	10

Table Q3.1

Write a function called `getPay` that receives the number of working hour as its only argument, and returns the daily pay to a worker.

[9 marks]

(c) A researcher stored 50 real-valued readings obtained from an experiment into a text file named "data.txt".

Write a complete C program that reads the "data.txt" file, and displays the largest value on the monitor screen.

[10 marks]

Continued...

Question 4

(a) Write a complete C program that prompts user for 5 integer values and stores the values into an array. Then, the program calculates and displays the average of the inputted values. A sample program output is given in Figure Q4.1 (texts in **bold** are user inputs).

```
Enter 5 integers: 72 80 84 76 90
Average = 80.40
```

Figure Q4.1 [10 marks]

(b) Determine the formatted outputs of the program segment shown in Figure Q4.2.

```
int num = 5, *nPtr;
int numList[] = {0,2,4,6,8};

printf("%d %d\n", num, numList[2]);

nPtr = &num;
*nPtr = (*nPtr)+2;
printf("%d %d\n", num, *nPtr);

nPtr = numList;
printf("%d %d\n", *(nPtr+2), (*nPtr)+2);
```

Figure Q4.2 [6 marks]

(c) Write a complete C program that does each of the following tasks.

(i) Define a structure named `BookRecord` that is capable of storing the serial number for a book and its price in Ringgit Malaysia (RM). [3 marks]

(ii) Declare a structure variable of type `BookRecord` named `book1`. [1 marks]

(iii) Prompt user for the serial number and the price of a book, and store the values into structure variable `book1`. [1+2 marks]

(iv) Display the contents of `book1`. [2 marks]

A sample program output is given in Figure Q4.3 (texts in **bold** are user inputs).

```
Enter serial number and price of a book: 1011234 62.50
The serial number and price entered are 1011234 and RM62.50.
```

Figure Q4.3

End of paper.